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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,465

03/21/2005

Hans-Christoph Magel

R.303671

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09/29/2006

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ALEXANDRIA, VA 22314

EXAMINER

MOULIS, THOMAS N

ART UNIT

PAPER NUMBER

3747

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/528,465	Applicant(s) MAGEL ET AL.	
	Examiner Thomas N. Moulis	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/21/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 16-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 16 is unclear and therefore indefinite in its final three lines. "...the improvement comprising return conduits (50, 52; 13, 53) for delivering partial return fuel quantities, depressurized to the prefeed pressure of the prefeed pump (55), to the low-pressure circuit (64) **by** pressure boosters (7, 52) or **by** fuel injectors (10), the partial return fuel quantities being delivered inside an infeed portion (60)." Perhaps each occurrence of "by" should be —from—, because it seems to say that the boosters or injectors do the delivering of the returning fuel to the infeed portion of the low-pressure circuit, which is not the case.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 16-17, 24, 26, 29 are rejected under 35 U.S.C. 102(b) as being anticipated by DE 196 52 831 A1. The reference discloses the claimed elements including a fuel injection system for an internal combustion engine, the system including a high-pressure fuel source, a fuel injector 484 which can be supplied with fuel from a high-pressure fuel source, including a high-pressure pumping unit and which includes an injection valve member for opening or closing injection openings, and a low-pressure circuit including a prefeed pump 410 which pumps fuel from a fuel tank 412, the improvement comprising return conduits (489) for delivering partial return fuel quantities from the fuel injectors, depressurized to the prefeed pressure of the prefeed pump, to the low-pressure circuit, the partial return fuel quantities being delivered inside an infeed portion between the two pumps. See Figure 4. Each fuel injector 484 has an individual return line 489, not shown for clarity (similar to Applicant drawings for clarity). Regarding claim 17, note the high-pressure fuel pumping unit subjects a common rail to fuel that is at high pressure.

3. Claims 16-17, 24, 26, 29 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 1 195 514 A2. The reference discloses the claimed elements including a fuel injection system for an internal combustion engine, the system including a high-pressure fuel source, a fuel injector 5 which can be supplied with fuel from a high-pressure fuel source, including a high-pressure pumping unit 7 and which includes an injection valve member for opening or closing injection openings, and a low-pressure circuit including a prefeed pump 11 which pumps fuel from a fuel tank 15, the

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improvement comprising return conduits 16 and 16 for delivering partial return fuel quantities from the fuel injectors, depressurized to the prefeed pressure of the prefeed pump, to the low-pressure circuit, the partial return fuel quantities being delivered inside an infeed portion between the two pumps. See Figure 1. Regarding claim 17, note the high-pressure fuel pumping unit subjects a common rail to fuel that is at high pressure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 27-28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1 195 514 in view of DE 199 10 970. The European document discloses all of the claimed elements including a fuel injection system for an internal combustion engine, the system including a high-pressure fuel source, a fuel injector 5 which can be supplied with fuel from a high-pressure fuel source, including a high-pressure pumping unit 7 and which includes an injection valve member for opening or closing injection openings, and a low-pressure circuit including a prefeed pump¹¹ which pumps fuel from a fuel tank 15, comprising return conduits 16 and 16 for delivering partial return fuel quantities from the fuel injectors, depressurized to the prefeed pressure of the prefeed pump, to the low-pressure circuit, the partial return fuel quantities being delivered inside

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an infeed portion between the two pumps. However a booster is not shown. However, DE document teaches it is known in the art to utilize pressure boosters in high-pressure injection systems and to integrate the booster with the injector to create a unit injector and to integrate the device with the fuel rail. It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize unit injectors with the system disclosed by the European document because their advantages are well known.

Allowable Subject Matter

6. Claims 18-23, 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the cited art showing return lines from injectors connected to the low-pressure fuel circuit between the low pressure and high-pressure pumps.

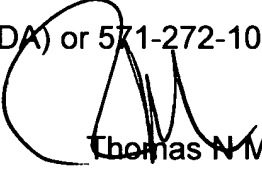
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas N. Moulis whose telephone number is 571 272 4852. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen K. Cronin can be reached on 571 272-4536. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Thomas N. Moulis
Primary Examiner
Art Unit 3747

tm